Biotechnology and Bioengineering

Volume 64, 1999

Volume 64, Number 1, July 5, 1999

1 Efficiency of Physical (Light) or Chemical (ABA, Tetracycline, $CuSO_4$ or 2-CBSU)-Stimulus-Dependent *gus* Gene Expression in Tobacco Cell Suspensions
H. Boetti, L. Chevalier, L.A. Denmat, D. Thomas, and B. Thomasset

14 Characterization of Bimodal Cell Death of Insect Cells in a Rotating-Wall Vessel and Shaker Flask
N.L. Cowger, K.C. O'Connor, T.G. Hammond, D.J. Lacks, and G.L. Navar

27 Effect of Solution pH on Protein Transport Through Ultrafiltration Membranes
D.B. Burns and A.L. Zydney

38 Expression, Reactivation, and Purification of Enzymes from *Haloferax volcanii* in *Escherichia coli*
H. Connaris, J.B. Chaudhuri, M.J. Danson, and D.W. Hough

46 Effect of Glutamine Limitation on the Death of Attached Chinese Hamster Ovary Cells
A. Sanfeliu and G. Stephanopoulos

54 Production of *S*-Lactoylglutathione by High Activity Whole Cell Biocatalysts Prepared by Permeabilization of Recombinant *Saccharomyces cerevisiae* with Alcohols
Y. Liu, H. Hama, Y. Fujita, A. Kondo, Y. Inoue, A. Kimura, and H. Fukuda

61 Fed-Batch Fermentor Synthesis of 3-Dehydroshikimic Acid Using Recombinant *Escherichia coli*
K. Li, M.R. Mikola, K.M. Draths, R.M. Worden, and J.W. Frost

74 Thermodynamic Analysis of Growth of *Methanobacterium thermoautotrophicum*
N.A. Schill, J.-S. Liu, and U. von Stockar

82 Fermentation Seed Quality Analysis with Self-Organising Neural Networks
M. Ignova, G.A. Montague, A.C. Ward, and J. Glassey

92 Medium Optimization for Spore Production of *Coniothyrium minitans* Using Statistically-Based Experimental Designs
L.P. Ooijkaas, E.C. Wilkinson, J. Tramper, and R.M. Buitelaar

101 Can the Combination of Electrochemical Regeneration of NAD^+, Selectivity of L-α-Amino-Acid Dehydrogenase, and Reductive Amination of α-Keto-Acid Be Applied to the Inversion of Configuration of a L-α-Amino-Acid?
A. Anne, C. Bourdillon, S. Daninos, and J. Moiroux

108 Serum Protects Protein-Free Competent Chinese Hamster Ovary Cells Against Apoptosis Induced by Nutrient Deprivation in Batch Culture
J.A. Zanghi, M. Fussenegger, and J.E. Bailey

COMMUNICATION TO THE EDITOR

120 Lipase-Catalyzed Dynamic Resolution of Naproxen 2,2,2-Trifluoroethyl Thioester by Hydrolysis in Isooctane
C.-S. Chang, S.-W. Tsai, and J. Kuo

127 Addendum

128 Forthcoming Articles

Volume 64, Number 2, July 20, 1999

129 Metabolic Fluxes, Pools, and Enzyme Measurements Suggest a Tighter Coupling of Energetics and Biosynthetic Reactions Associated with Reduced Pyruvate Kinase Flux
A. Goel, J. Lee, M.M. Domach, and M.M. Ataai

135 Production of a Diagnostic Monoclonal Antibody in Perennial Alfalfa Plants
H. Khoudi, S. Laberge, J.-M. Ferullo, R. Bazin, A. Darveau, Y. Castonguay, G. Allard, R. Lemieux, and L.-P. Vézina

144 Protein Solubility Modeling
S.M. Agena, M.L. Pusey, I.D.L. Bogle

151 Metabolic Flux Analysis for Serine Alkaline Protease Fermentation by *Bacillus licheniformis* in a Defined Medium: Effects of the Oxygen Transfer Rate
P. Çalik, G. Çalik, S. Takaç, and T.H. Özdamar

168 Application of Factorial Designs for Optimization of Cyclodextrin Glycosyltransferase Production from *Klebsiella pneumoniae pneumoniae* AS-22
B.N. Gawande and A.Y. Patkar

174 Bcl-2 Over-Expression Reduces Growth Rate and Prolongs G_1 Phase in Continuous Chemostat Cultures of Hybridoma Cells
N.H. Simpson, R.P. Singh, A.N. Emery, and M. Al-Rubeai

187 Pilot Scale Production and Isolation of Recombinant NAD^+- and $NADP^+$-Specific Formate Dehydrogenases
V.I. Tishkov, A.G. Galkin, V.V. Fedorchuk, P.A. Savitsky, A.M. Rojkova, H. Gieren, and M.-R. Kula

194 Efficient Coupled Transcription/Translation from PCR Template by a Hollow-Fiber Membrane Bioreactor
H. Nakano, T. Shinbata, R. Okumura, S. Sekiguchi, M. Fujishiro, and T. Yamane

200 In Vivo Nuclear Magnetic Resonance Studies of Glycolytic Kinetics in *Lactococcus lactis*
A.R. Neves, A. Ramos, M.C. Nunes, M. Kleerebezem, J. Hugenholtz, W.M. de Vos, J. Almeida, and H. Santos

213 Optimizing Lipase Activity, Enantioselectivity, and Stability with Medium Engineering and Immobilization for β-Blocker Synthesis
S.C. Mohapatra and J.T. Hsu

221 Biodegradation of Neutralized Sarin
Y. Zhang, R.L. Autenrieth, J.S. Bonner, S.P. Harvey, and J.R. Wild

232 Imprinted Polymers as Tools for the Recovery of Secondary Metabolites Produced by Fermentation
J.Y. Ju, C.S. Shin, M.J. Whitcombe, and E.N. Vulfson

240 Use of Exogenous Specialised Bacteria in the Biological Detoxification of a Dump Site-Polychlorobiphenyl-Contaminated Soil in Slurry Phase Conditions
F. Fava and L. Bertin

COMMUNICATION TO THE EDITOR

250 Increasing the Tolerance of Organophosphorus Hydrolase to Bleach
K.E. LeJeune, J.S. Swers, A.D. Hetro, G.P. Donahey, and A.J. Russell

255 Forthcoming Articles

Volume 64, Number 3, August 5, 1999

257 Bubble Rise Velocities and Drag Coefficients in Non-Newtonian Polysaccharide Solutions
A. Margaritis, D.W. te Bokkel, and D.G. Karamanev

267 Synthesis of Sugar Fatty Acid Esters by Modified Lipase
W. Tsuzuki, Y. Kitamura, T. Suzuki, and S. Kobayashi

272 Modeling, Simulation, and Kinetic Analysis of a Heterogeneous Reaction System for the Enzymatic Conversion of Poorly Soluble Substrate
D.-C. Lee, J.-H. Park, G.-J. Kim, and H.-S. Kim

284 Fermentability of the Hemicellulose-Derived Sugars from Steam-Exploded Softwood (Douglas Fir)
A. Boussaid, J. Robinson, Y.-j. Cai, D.J. Gregg, and J.N. Saddler

290 Poly(ethylene glycol)-Modified Ligninase Enhances Pentachlorophenol Biodegradation in Water–Solvent Mixtures
P. Wang, C.A. Woodward, and E.N. Kaufman

298 The Adaptation of BHK Cells to a Non-Ammoniagenic Glutamate-Based Culture Medium
A. Christie and M. Butler

310 Process Intensification by Direct Product Sequestration from Batch Fermentations: Application of a Fluidised Bed, Multi-Bed External Loop Contractor
G.E. Hamilton, P.H. Morton, T.W. Young, and A. Lyddiatt

322 Development of an Ultra-High-Temperature Process for the Enzymatic Hydrolysis of Lactose. I. The Properties of Two Thermostable β-Glycosidases
I. Petzelbauer, B. Nidetzky, D. Haltrich, and K.D. Kulbe

333 Controlled Regioselectivity of Fatty Acid Oxidation by Whole Cells Producing Cytochrome $P450_{BM-3}$ Monooxygenase under Varied Dissolved Oxygen Concentrations
S. Schneider, M.G. Wubbolts, G. Oesterhelt, D. Sanglard, and B. Witholt

342 Biotransformation of Carbon Tetrachloride by Various Acetate- and Nitrate-Limited Denitrifying Consortia
J.L. Sherwood, J.N. Petersen, and R.S. Skeen

349 Effects of Cell Density and Temperature on Oxygen Consumption Rate for Different Mammalian Cell Lines
P. Jorjani and S.S. Ozturk

357 Monitoring of Intracellular Ribonucleotide Pools is a Powerful Tool in the Development and Characterization of Mammalian Cell Culture Processes
S.I. Grammatikos, K. Tobien, W. Noé, and R.G. Werner

COMMUNICATIONS TO THE EDITOR

368 pH Regulation of Recombinant Glucoamylase Production in *Fusarium venenatum* JeRS 325, a Transformant with a *Fusarium oxysporum* Alkaline (Trypsin-like) Protease Promoter
M.G. Wiebe, G.D. Robson, J.R. Shuster, and A.P.J. Trinci

373 Activity Losses Among T4 Lysozyme Charge Variants after Adsorption to Colloidal Silica
C.K. Bower, S. Sananikone, M.K. Bothwell, and J. McGuire

377 Stability of Native and Cross-Linked Crystalline Glucose Isomerase
K. Visuri, O. Pastinen, X. Wu, K. Mäkinen, and M. Leisola

381 Forthcoming Articles

Volume 64, Number 4, August 20, 1999

383 Electrically Immobilized Enzyme Reactors: Bioconversion of a Charged Substrate. Hydrolysis of Penicillin G by Penicillin G Acylase
A. Bossi, S. Guerrera, and P.G. Righetti

392 Extractive Fermentation of Aroma with Supercritical CO_2
C.E. Fabre, J.-S. Condoret, and A. Marty

401 Incorporation of Ammonium into Intracellular UDP-Activated *N*-Acetylhexosamines and into Carbohydrate Structures in Glycoproteins
U. Valley, M. Nimtz, H.S. Conradt, and R. Wagner

418 Enhancing Ligand–Protein Binding in Affinity Thermoprecipitation: Elucidation of Spacer Effects
A.A. Vaidya, B.S. Lele, M.G. Kulkarni, and R.A. Mashelkar

426 Transformed Lepidopteran Insect Cells: New Sources of Recombinant Human Tissue Plasminogen Activator
P. J. Farrell, L.A. Behie, and K. Iatrou

434 Transmembrane Distribution of Substrate and Product During the Bioreduction of Acetophenone with Resting Cells of *Saccharomyces cerevisiae*
Y. Zhao, and G.B. DeLancey

442 A Predictive Thermodynamic Model for the Bioreduction of Acetophenone to Phenethyl Alcohol Using Resting Cells of *Saccharomyces cerevisiae*
Y. Zhao, and G.B. DeLancey

452 Membrane Sparger in Bubble Column, Airlift, and Combined Membrane–Ring Sparger Bioreactors
B.R. Poulsen, and J.J.L. Iversen

459 Integrated Two-Liquid Phase Bioconversion and Product-Recovery Processes for the Oxidation of Alkanes: Process Design and Economic Evaluation
R.G. Mathys, A. Schmid, and B. Witholt

478 Inhibitory Effect of Iron-Oxidizing Bacteria on Ferrous-Promoted Chalcopyrite Leaching
N. Hiroyoshi, M. Hirota, T. Hirajima, and M. Tsunekawa

484 The Influence of Complex Biological Feedstock on the Fluidization and Bed Stability in Expanded Bed Adsorption
H.M. Fernández-Lahore, R. Kleef, M.-R. Kula, and J. Thömmes

COMMUNICATIONS TO THE EDITOR

497 Improvement of Red Pigment/Citrinin Production Ratio as a Function of Environmental Conditions by *Monascus ruber*
H. Hajjaj, P.J. Blanc, E. Groussac, G. Goma, J. L. Uribelarrea, and P. Loubiere

502 Surfactant–Histidine–Heme Ternary Complex as a Simple Artificial Heme Enzyme in Organic Media
N. Kamiya, M. Goto, and S. Furusaki

507 Forthcoming Articles

Volume 64, Number 5, September 5, 1999

509 Quantification of Cellular Properties from External Fields and Resulting Induced Velocity: Cellular Hydrodynamic Diameter
J.J. Chalmers, S. Haam, Y. Zhao, K. McCloskey, L. Moore, M. Zborowski, and P.S. Williams

519 Quantification of Cellular Properties from External Fields and Resulting Induced Velocity: Magnetic Susceptibility
J.J. Chalmers, S. Haam, Y. Zhao, K. McCloskey, L. Moore, M. Zborowski, and P.S. Williams

527 Quantitative Structure–Activity Relationship (QSAR) Analysis of Surfactants Influencing Attachment of a *Mycobacterium* Sp. to Cellulose Acetate and Aromatic Polyamide Reverse Osmosis Membranes
P. Campbell, R. Srinivasan, T. Knoell, D. Phipps, K. Ishida, J. Safarik, T. Cormack, and H. Ridgway

545 Fourier-Transform Infrared Spectroscopy Study of Dehydrated Lipases from *Candida antarctica* B and *Pseudomonas cepacia*
G. Vecchio, F. Zambianchi, P. Zacchetti, F. Secundo, and G. Carrea

552 Scale-Up of Citric Acid Fermentation by Redox Potential Control
M. Berovič

558 Modelling and Parameter Estimation of the Enzymatic Synthesis of Oligosaccharides by β-Galactosidase from *Bacillus circulans*
M.A. Boon, A.E.M. Janssen, and A. van der Padt

568 Biotechnology for the Production of Nutraceuticals Enriched in Conjugated Linoleic Acid: I. Uniresponse Kinetics of the Hydrolysis of Corn Oil by a *Pseudomonas sp.* Lipase Immobilized in a Hollow Fiber Reactor
P.S. Sehanputri and C.G. Hill, Jr.

580 Cardiac Tissue Engineering: Cell Seeding, Cultivation Parameters, and Tissue Construct Characterization
R.L. Carrier, M. Papadaki, M. Rupnick, F.J. Schoen, N. Bursac, R. Langer, L.E. Freed, and G. Vunjak-Novakovic

590 On-Line Detection of Acetate Formation in *Escherichia coli* Cultures Using Dissolved Oxygen Responses to Feed Transients
M. Åkesson, E.N. Karlsson, P. Hagander, J.P. Axelsson, and A. Tocaj

599 A Special Reactor Design for Investigations of Mixing Time Effects in a Scaled-Down Industrial L-Lysine Fed-Batch Fermentation Process
B.M. Schilling, W. Pfefferle, B. Bachmann, W. Leuchtenberger, and W.-D. Deckwer

607 Genetically Controlled Cell Lysis in the Yeast *Saccharomyces cerevisiae*
N. Zhang, D.C.J. Gardner, S.G. Oliver, and L.I. Stateva

COMMUNICATIONS TO THE EDITOR

616 The Use of Lectins to Select Subpopulations of Insect Cells
M.S. Donaldson and M.L. Shuler

620 Isolation of a Novel Microorganism, *Pestalotia heterocornis*, Producing Paclitaxel
M.-J. Noh, J.-G. Yang, K.-S. Kim, Y.-M. Yoon, K.-A. Kang, H.-Y. Han, S.-B. Shim, and H.-J. Park

624 Spectroscopic Investigation of Lipase from *Pseudomonas cepacia* Solubilized in 1,4-Dioxane by Non-Covalent Complexation with Methoxypoly(Ethylene Glycol)
F. Secundo, G. Carrea, G. Vecchio, and F. Zambianchi

630 Forthcoming Articles

631 Erratum

Volume 64, Number 6, September 20, 1999

633 Effects of Spatial Variation of Cells and Nutrient and Product Concentrations Coupled with Product Inhibition on Cell Growth in a Polymer Scaffold
C.J. Galban and B.R. Locke

644 Tolerance of *Escherichia coli* β-Galactosidase C-Terminus to Different-Sized Fusions
J.L. Corchero and A. Villaverde

650 Use of Molecularly Imprinted Polymers in a Biotransformation Process
L. Ye, O. Ramström, R.J. Ansell, M.-O. Månsson, and K. Mosbach

656 Cellular Growth in Biofilms
B.D. Wood and S. Whitaker

671 Modeling Continuous Bioleach Reactors
A.W. Breed and G.S. Hansford

678 Highly Selective Synthesis of 1,3-Oleoyl-2-Palmitoylglycerol by Lipase Catalysis
U. Schmid, U.T. Bornscheuer, M.M. Soumanou, G.P. McNeill, and R.D. Schmid

685 Fractionation of Sugar Beet Pulp into Pectin, Cellulose, and Arabinose by Arabinases Combined with Ultrafiltration
M. Spagnuolo, C. Crecchio, M.D.R. Pizzigallo, P. Ruggiero

692 Continuous Ethanol Fermentation of Lactose by a Recombinant Flocculating *Saccharomyces cerevisiae* Strain
L. Domingues, M.M. Dantas, N. Lima, and J.A. Teixeira

698 An Inverse Correlation between Stress Resistance and Stuck Fermentations in Wine Yeasts. A Molecular Study
C. Ivorra, J.E. Pérez-Ortin, and M. del Olmo

709 H_2 Photoproduction by Batch Culture of *Anabaena variabilis* ATCC 29413 and Its Mutant PK84 in a Photobioreactor
A.A. Tsygankov, V.B. Borodin, K.K. Rao, and D.O. Hall

716 Extension of Logarithmic Growth of *Thiobacillus ferrooxidans* by Potential Controlled Electrochemical Reduction of Fe(III)
N. Matsumoto, S. Nakasono, N. Ohmura, and H. Saiki

722 Response of *Rhizopus oligosporus* to Temporal Temperature Profiles in a Model Solid-State Fermentation System
L. Ikasari, D.A. Mitchell, and D.M. Stuart

729 Investigation of Liquid–Solid Hydrodynamic Boundary Layers and Oxygen Requirements in Hairy Root Cultures
G.R.C. Williams and P.M. Doran

741 Cytogenetic Analysis of Chimeric Antibody-Producing CHO Cells in the Course of Dihydrofolate Reductase-Mediated Gene Amplification and Their Stability in the Absence of Selective Pressure
S.J. Kim and G.M. Lee

COMMUNICATIONS TO THE EDITOR

750 Estimation of P-to-O Ratio in *Bacillus subtilis* and Its Influence on Maximum Riboflavin Yield
U. Sauer and J.E. Bailey

755 Use of the Abiotic Proton Balance for Describing the pH-Auxostat
S.A. Siano

759 Forthcoming Articles

760 Indexes to Volume 64